

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/974,048

REMARKS

Claims 1-5 are all the claims pending in the application. Claims 1-5 presently stand rejected.

Claim 4 is objected to because of informalities. Applicants amend claim 4 to correct this minor matter.

Claims 1-3 and 5 are rejected under 35 U.S.C. § 102(e) as being anticipated by Hashimoto et al. (6,225,569).

Claim 4 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Hashimoto et al. (6,225,569) in view of Omote et al. (6,198,052).

Analysis

Turning to claim 1, this claim is directed to a circuit board. It includes a terminal portion connected with an external terminal. It has a nickel plating layer and a soldering bump. The thickness of the plating layer is 1.0 to 2.5 μm .

Hashimoto discloses a nickel plating layer thickness is 2.5 - 8 μm thick. Hashimoto specifically teaches away from using a thickness of less than 2.5 μm (see col. 2, lines 61-66 and col. 7). Thus, claim 1 is patentable because one would not have been motivated to modify Hashimoto to arrive at the thickness range according to claim 1.

Turning to independent claim 5, this claim is patentable for the same reasons as claim 1 above. Namely, the cited art fails to render claim 5 obvious because Hashimoto specifically teaches away from the range of 1.0-2.5 μm .

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The remaining rejections are directed to the dependent claims. These claims are patentable for at least the same reasons as claim 1, by virtue of their dependency therefrom. Moreover, these claims are patentable due to their own recitations contained therein.

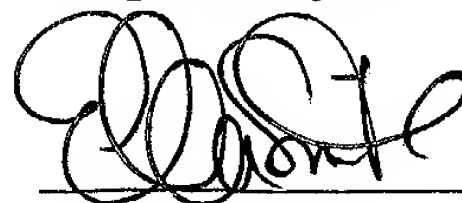
For example, with respect to claims 2 and 3, Hashimoto fails to teach or suggest that the soldering bump should contain silver or copper, i.e., this reference discusses the use of tin. Thus, these claims are patentable.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,



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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

1. (Amended) A circuit board comprising:

a terminal portion connected with an external terminal formed in an external circuit, said terminal portion provided with a nickel plating layer and a soldering bump;

wherein a thickness of said nickel plating layer is within a range of 1.0 to [4.0 μ m] 2.5 μ m.

4. (Amended) A circuit board according to Claim 1, wherein said circuit board is a [circuit-provided] circuit provided suspension substrate.

5. (Amended) A connection structure for connecting a terminal portion of a circuit board with an external terminal formed in an external circuit, wherein said terminal portion is provided with a nickel plating layer and a soldering bump provided on said terminal portion and a thickness of said nickel plating layer is within a range of 1.0 to [4.0 μ m] 2.5 μ m.